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The Incidence of Replacement of Restoration in Teeth in South Indian Population

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Abstract

This epidemiological survey examined 2000 subjects randomly and correlated the data provided with type of restoration, causes of re-restoration and patient factors such as age and gender and oral hygiene measures with restoration longevity. The data was statistically analysed through chi-square and binomial tests. The result obtained was that the amalgam restoration showed the maximum failures (47%) followed by composite (33%) glass ionomer cement (6%) onlay(4%) and inlay(2%). The main cause of replacement of restoration was secondary caries (42%) followed by material fracture (37%) and discoloration (21%). The mean age for the fracture of restoration was 15 years and males are more affected. Co-relating with oral hygiene measures persons brushing once was more prone for replacement of restoration. Conclusion Amalgam was the most widely used restorative material but was associated with more replacement. Secondary caries is most common reason for replacement of restorations.

Key words: amalgam, composite, glass ionomer, replacement, restoration.

Introduction

Over the last 50 years numerous surveys have been conducted in various countries on reasons for the replacement of restorations. Data from such survey despite their acknowledged limitations are considered to be of importance in extending existing knowledge and understanding the patterns of provision of primary dental care, including the use of restorative materials. The longevity of restorations is dependent upon many factors, including operator skill, the materials and techniques used, the criteria for replacement, patient compliance with oral hygiene advice. The present study was undertaken to analyse the reasons for the replacement of amalgam, composite, glass ionomer, inlay and onlay in permanent teeth in general dental practice. The data were subdivided on the basis of location, oral hygiene measures, age and gender of the patient.

Materials and Methods

The study is done on 2000 subjects. One thousand subjects will be selected randomly from the patients coming to the Department of Conservative Dentistry, A.B. Shetty dental college and 1000 subjects will be randomly selected from patients coming to the rural centers. The patients were examined for restoration replacement after the tooth has been isolated and a questionnaire is prepared to ask the patient history related to replacement of restoration.

3.1. General Data

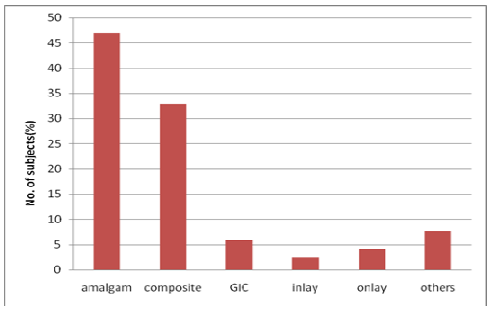

Diagram:1 Amalgam47.1% , 33% composite, 5.8% GIC, 2.4% inlay, 4.1% onlay and 7.6% other fillings.
Out of 291 cases inspected in 2000 patients,47.1% restorations placed were amalgam, 33% were composite, 5.8% GIC, 2.4% inlay, 4.1% onlay and 7.6% other fillings.

3.2 Reasons for Replacement

Table 1: Out of 291 cases inspected in 2000 patients secondary caries was the most common reason for the replacement of restorations , accounting for 56.5% of the replaced restorations were amalgam, 47% of the replaced composite restorations, 48% of the replaced glass ionomer restoration, 2.4% of the restoration were inlay and 4.1% of the restoration were onlay. Apart from secondary caries, the most prevalent reasons for replacement of restorations were fractured restoration, composite36.8%, amalgam20.6%, glass ionomer cement 28.6%, inlay15.6% and onlay3.5% and discoloration of the restoration composite 30.6%, glass ionomer cement 20.5%, and inlay 16.5%

Table:1

Clinical diagnosis	Amalgam	Composite	Glass ionomer	Inlay	Onlay
Secondary caries	56.5%	47%	48%	2.4%	4.1%
Fracture of restoration	20.6%	36.8%	28.6%	15.6%	3.5%
discoloration	0%	88.5%	20.5%	16.5%	0%

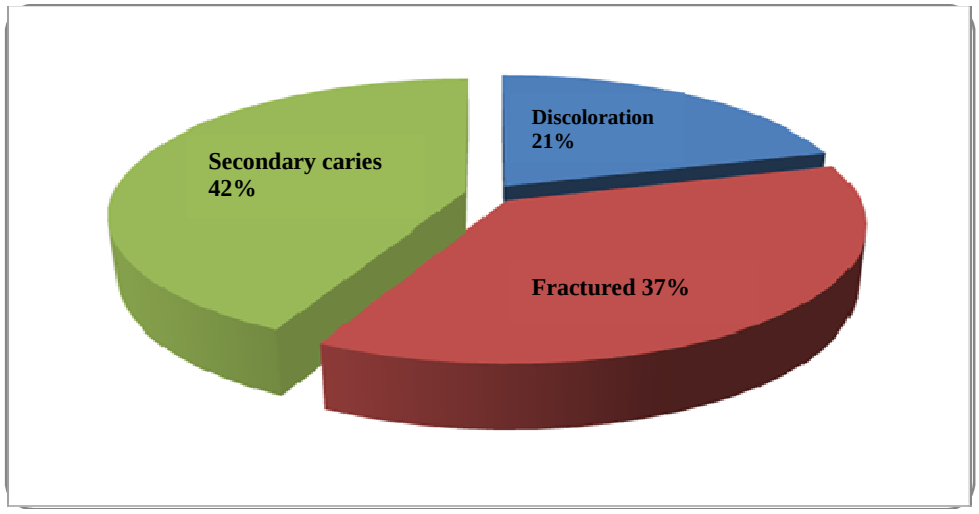

Figure.1: 242% of restorations replaced were due to secondary caries, 21% were due to discoloration and 37% were fractured

3.3. Incidence of Replacement of Restoration Co-Related With Oral Hygiene Measures

Table2:Out of 291 cases with restoration replacement in 2000 patients,220 (75.6%)had brushing habit once daily and 71(24.4%) with brushing habit twice daily.

Table:2

S.No	frequency	Percent
Once	220	75.6
Twice	71	24.4

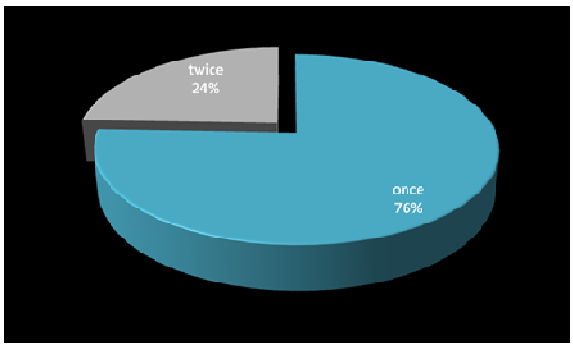

Figure.2: Three Out of 291 cases, 220 (75.6%) had brushing habit once daily and 71(24.4%) with brushing habit twice daily

3.3 The Mean Age for Restoration Replacement

Graph:4 Out of 291 cases in 2000 patients inspected, the mean age for restoration replacement was 15 years and the degree of occurrences was more in the age group between 31- 40 years. Glass ionomer were found to be placed more frequently in older patients, while younger patients tended to receive restorations of amalgam and composite.

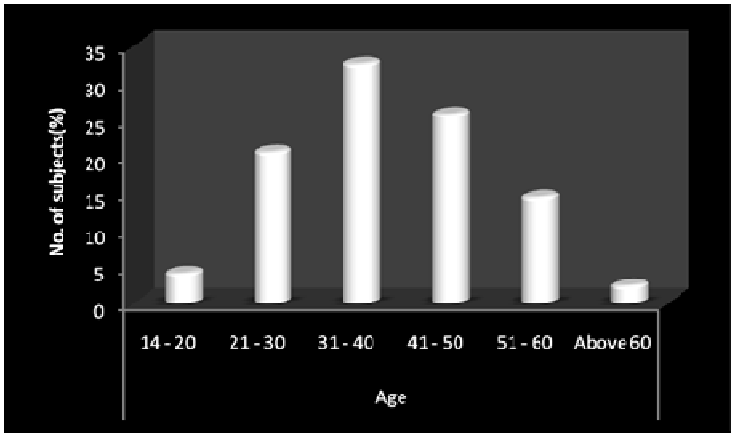

Figure.3: 4The mean age for restoration replacement was 15 years and the degree of occurrences was more in the age group between 31- 40 years.

3.5 Incidence of Replacement of Restoration With Respect to Gender

Table 3: Out of 291 cases with restoration replacement in 2000 patients, 180 cases (61.9%) were seen in males compared to 111(38.1%) in females 38.1%.

Table:3

Gender	frequency	Percent
Male	180	61.9
Female	111	38.1
Total	291	100.0

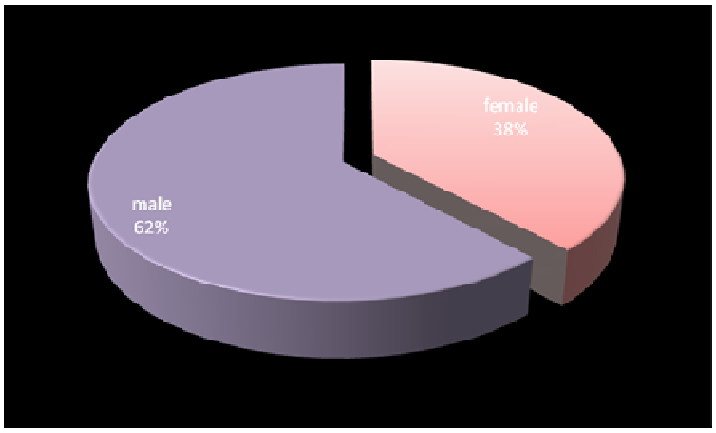

Figure.4: Five Out of 291 cases 180 cases (61.9%) were seen in males compared to 111(38.1%) in females 38.1%.

Results and Discussion

Discussion

In the present study the results largely confirmed with respect to reasons for replacement of amalgam, composite glass ionomer restorations, inlay and onlay and insight in to changes in the quality of the materials for the past few years. The results obtained further confirmed, secondary caries was by far the most common reason for replacement of all types of restorations. In 2000 patients in our study47.1% restorations placed were amalgam, 33% composite, 5.8% GIC, 2.4% inlay, 4.1% onlay and 7.6% other fillings. This indicates that amalgam has been the most widely used restorative material over the last 20 years [Vassiliki Deligeorgi, Ivar A Mjör and Nairn HF Wilson PRIMARY DENTAL CARE 2001;8(1):5-11]. Incidence of replacement of restorations due to secondary caries is highesti.e.

amalgam56.5% followed by composite 47% ,glass ionomer 48% inlay 2.4%onlaysimilar to the findings by[Ivar A. Mojor; Jacquelyn E. Moorhead ;and Jon E.Dahl, International Dental Journal (2000)50, 361-366] which showed amalgam 57% composite 47% and gic 50% .However in another study [F.J.T Burke; N.H.F. Wilson; S.W. Cheung, I.A.Mjor Journal of Dentistry(2001) 29 317-324] the number of glass ionomer restorations replaced as a result of secondary caries is less (20%) less than the proportion in our study (48%) .Secondary caries is apparently not related to crevices at the tooth/restoration interface but it is usually located at the gingival part. Many factors play a role in the development of secondary caries at the gingival part of restorations as it is a difficult area to control clinically during insertion of restorations and it is the area most difficult to be reached by oral hygiene measures.

Material fracture accounted for the second common reason. The proportion of amalgam 25.6%, composite 36.8%, gic 28.6%, inlay 15.6%and onlay3.5% replaced with the diagnosis of material fracture is similar to that in the previous study [Ivar A. Mojor ; Jacquelyn E. Moorhead ;and Jon E.Dahl , International Dental Journal (2000)50, 361-366] which showed amalgam 25% composite 24% and gic 25%. This account for bulk and margin fracture which was seen mostly in composites,gic and amalgam when compared with inlay and onlay and was associated with the strength of the material. The results indicate that composites and glass ionomer fracture were due to their brittle nature and contributes to chipping and marginal break down even in non- stress bearing areas.[Lee WC, Eakle WS. Possible role of tensile stress in the etiology of cervical erosive lesions of teeth. Journal of Prosthetic Dentistry 1984;53:374-9]. The amalgam fracture occurs mostly due to improper manipulation of the material.

In the present study discolouration was cited as the third most common reason for replacement of composite 88.5% and glass ionomer materials 20.5%.This is supported by the study done by study [Ivar A. Mojor ; Jacquelyn E. Moorhead ;and Jon E.Dahl , International Dental Journal (2000)50, 361-366]who found that bulk discoloration was cited as the third most common reason for replacement of composite and glass ionomer materials. In the present study we found that the incidence of restoration replacement was seen more among subjects who brushed once daily compared to those who brushed twice. This observation was similar with the findings of [F.J.T Burke; N.H.F. Wilson; S.W. Cheung, I.A.Mjor Journal of Dentistry (2001) 29 317-324].Many factors can attribute to this finding as a reduction in secondary caries owing to a good oral hygiene and any predisposing factors which aggravates secondary caries, since more than half the restorations replaced have the clinical diagnosis secondary caries.

The mean age for restoration replacement was 15 years and the degree of occurance was more in the age group between 31- 40 years which was similar to findings by [MJ TyasAustralian Dental Journal 2005;50:(2):81-89].Secondary caries and fracture of the tooth were most common reasons for restoration replacement. When gender was cross tabulated with restoration replacement in our study, we found males (61.9) to have replaced restoration as compared to females (38.1) as males have many para functional habits in contrast with the study byby [F.J.T. Burke etal, N.H.F. Wilson etal, S.W. Cheung etal and I.A. Mojor etal Journal of Dentistry (2001) 29 317-324].In their study no association was found in the reasons for replacement of restorations and patient gender for adolescents and adults.

Conclusion

It may be concluded that surveys of reasons for the replacement of restorations produced real life data indicating the need to further research and teach a more preservative approach to everyday clinical practice in dentistry. The survey also calls for detailed studies of secondary caries, the most commonly stated reason for replacement of restorations.

References

1. Mjor I A. Placement and replacement of restorations. Oper Dent 1981 6:49-54
2. Qvist J, Qvist V, Mjor I A . Placement and longevity of amalgam restorations in Denmark. ActaOdontolScand 1990 48:297-303.
3. Mjor I A, Moorhead J E, Dahl J E. Selection of restorative materials in permanent teeth in general dental practice. ActaOdontolscand 1999: 57: 257-262.
4. Mjor I A, Dahl J E, Moorhead J E. The age of restorations at replacement in permanent teeth in general dental practice. ActaOdontolScand 2000 58:.
5. Burke F J T, Cheung S W, Mjor I A, Wilson N H F. Reasons for the placement and replacement of restorations in vocational training practices. Prim den care 1999 6: 17-20
6. Mjor I A. The frequency of secondary caries at various anatomical locations Oper Dent 1985 10: 88-92.
7. Burke F J T, Mjor I A, and Wilson N H F. Reasons for the placement and replacement of direct restorative materials by a selected group of practitioners in the United Kingdom. Quintessence Int 1997 28: 245-248
8. Jokstad A, Mjor I A. Replacement reasons and service time of class II amalgam restorations in relation to cavity design. ActaOdontolScand1991.

9. Kovarik R E, Muncy M V. Fracture toughness of resin- modified glass ionomers. American journal of dentistry 1995; 8:145-8.
10. Hawthrone W S, Smales R J. Factor's influencing long-term restoration survival in three private dental practices. Australian Dental Journal 1997;42:59-63
11. Downer M C , Azli NA, Bedi R, Moles D R, Setchell D J. How long do routine dental restorations last? A systematic review. British Dental journal 1999;187;432-9
12. Van Nieuwenhuysen JP, D'Hoore W, Carvalho J, Qvist V. Longterm evaluation of extensive restorations in permanent teeth. JDent 2003; 31:395-405.
13. Burke FJ, Cheung SW, Mjör IA, Wilson NH. Reasons for the placement and replacement of restorations in vocational training practices. Prim Dent Care 1999; 6:17-20.
14. Boyd MA, Richardson AS. Frequency of amalgam replacement in general dental practice. J Can Dent Assoc 1985; 51:763-6.